

### REMARKS

Reconsideration of the pending application is respectfully requested on the basis of the following particulars.

1. Rejection of claims 1 and 6-9 under 35 U.S.C. § 103(a) as being unpatentable over U.S. patent no. 4,059,036 (*Hartley*) in view of U.S. patent no. 5,168,623 (*Rabe*) and further in view of U.S. patent no. 6,527,266 (*Yonezawa et al.*)

Reconsideration of this rejection is respectfully requested on the basis that the rejection fails to establish a *prima facie* case of obviousness with respect to pending claim 1, from which claims 6-9 depend.

In particular, the proposed combination of the *Hartley*, *Rabe*, and *Yonezawa* patents fails to disclose a pull member connected to an intermediate member substantially at all times in a manner to prevent relative axial movement between the pull member and the intermediate member, as required by pending claim 1.

Additionally, the proposed combination of the *Hartley*, *Rabe*, and *Yonezawa* patents also fails to disclose a fluid flow hole opened in a straight outer surface of an intermediate member and closed by close engagement with an inner surface of the hole in the moveable member, as required by pending claim 1.

By way of review, pending claim 1 defines an embodiment of a clamping device that includes a central pillar projected from a reference member for insertion into a hole of a moveable member. The central pillar is provided with a tapered inclined outer surface that corresponds to an inclined inner surface of an intermediate member having a straight outer surface to fit an inner periphery of the hole. At least a part of the circumference of the intermediate member is allowed to deform in both an expanding and contracting direction. A pull member is axially movably inserted into the central pillar and is further connected to the intermediate member substantially at all times in a manner to prevent relative axial movement between the pull member and the intermediate member. A lock and release arrangement are provided to move the intermediate member via the pull member toward a base end for locking or toward



a leading end for releasing. A fluid flow hole is opened in the straight outer surface of the intermediate member and is closed by the inner peripheral surface of the hole when the straight outer surface of the intermediate member comes into close contact with the inner peripheral surface of the hole when the intermediate member is moved for locking.

According to the embodiment of pending claim 1, the pull member is connected to the intermediate member substantially at all times in a manner to prevent relative axial movement between the pull member and the intermediate member, so that the pull member can effectuate the locking and releasing of the intermediate member by pulling the intermediate member towards the base end or the leading end respectively, without backlash or relative axial movement between the pull member and the intermediate member.

In contrast to the structural configuration recited in pending claim 1, the *Hartley* patent fails to disclose a pull member that is connected to an intermediate member substantially at all times in a manner to prevent relative axial movement between the pull member and the intermediate member. On page 2, the Office action associates the split ring 2 with the intermediate member of claim 1, the rod 7, the second plug, and the second split ring 1 with the pull member of claim 1, and the plug 5 with the central pillar of claim 1. The split ring 2 is caused to expand via engagement with the plug 5 and via compression caused by retracting the rod 7, which is connected to a second plug 4, which contacts a second split ring 1, which contacts the split ring 2.

It is clear from the description in the *Hartley* patent that the rod 7 and the plugs 4, 5 are moved axially relative to the split rings 1, 2 in order to cause the split rings to expand and contract (col. 2, lines 54-57). Thus, in contrast to pending claim 1, the *Hartley* patent specifically discloses a split ring 2 that is not connected to the plugs 4, 5 and rod 7 substantially at all times in a manner to prevent relative axial movement between the split ring 2 and the plugs 4, 5 and rod 7.



Further, in order for the device of the *Hartley* patent to properly function, the rod 7 and the plugs 4, 5 *must* move axially relative to the split ring 2 in order to cause the split ring to expand and contract (col. 2, lines 54-57).

This deficiency of the *Hartley* patent is acknowledged in the Office action on page 2.

The Office action turns to the *Rabe* patent to cure this deficiency of the *Hartley* patent. Specifically, on page 2, the Office action states that the *Rabe* patent teaches in Fig. 5 “that there is no axial movement between the pull member 17, 16 and intermediate member 18.” Here the Office action equates the collet member 16 and the rear flange 17 of the collet member of the *Rabe* patent to the pull member 21 of the pending application and the expandable jaws 18 of the collet member 16 of the *Rabe* patent to the intermediate member 15 of the pending application.

The above statement in the Office action is inaccurate for at least two reasons. Firstly, as will be recognized by any person having ordinary skill in the art, the only structure in the *Rabe* patent that may be considered equivalent to a pull member is the piston 19 and the piston rod 20, and not the collet member 16 and the rear flange 17 of the collet member of the *Rabe* patent.

With this understanding of the *Rabe* patent, which is apparent to a person having ordinary skill in the art, it can be seen that the *Rabe* patent thus discloses relative axial movement between the piston 19 and the piston rod 20 (pull member) and the expandable jaws 18 of the collet member 16 (intermediate member). This configuration is in clear contrast to pending claim 1, which requires a pull member that is connected to an intermediate member substantially at all times in a manner to prevent relative axial movement between the pull member and the intermediate member.

Secondly, even if the collet member 16 and the rear flange 17 of the collet member of the *Rabe* patent are considered to be a pull member, the configuration of the collet member 16 and the rear flange 17 and the expandable jaws 18, requires



relative axial movement between the components to some degree. This can be seen by a comparison of Figs. 3 and 4 of the *Rabe* patent. In particular, while the thin long section (unlabeled) connecting the collet member 16 and the expandable jaws 18 is straight in Fig. 3, the same section is deformed in the radial direction in Fig. 4. Thus, there is clearly some relative axial movement between the collet member 16 and the expandable jaws 18 since the distance therebetween is shortened due to the deformation of the thin long section.

For at least these two reasons, the *Rabe* patent fails to disclose a pull member that is connected to an intermediate member substantially at all times in a manner to prevent relative axial movement between the pull member and the intermediate member.

Accordingly, the proposed combination of the *Hartley* and *Rabe* patents fails to disclose a pull member that is connected to an intermediate member substantially at all times in a manner to prevent relative axial movement between the pull member and the intermediate member.

The Office action turns to the *Yonezawa* patent for combination with the *Hartley* and *Rabe* patents. However, as is shown in Figs. 2-5 of the *Yonezawa* patent, the shuttle member 23 is also not connected to the pull member 31, since the shuttle member 23 is separated from the pull rod 31 by the plug portion 21, and the shuttle member 23 further moves axially with respect to the pull member 31, which is in contrast to pending claim 1, which requires a pull member that is connected to an intermediate member substantially at all times in a manner to prevent relative axial movement between the pull member and the intermediate member.

Thus, none of the *Hartley*, *Rabe*, and *Yonezawa* patents discloses a pull member that is connected to an intermediate member substantially at all times in a manner to prevent relative axial movement between the pull member and the intermediate member, as is required by pending claim 1. Since this structure is not disclosed in any of the *Hartley*, *Rabe*, and *Yonezawa* patents, it follows that the



proposed combination of the *Hartley*, *Rabe*, and *Yonezawa* patents will also fail to disclose this structure.

Therefore, since the proposed combination of the *Hartley*, *Rabe*, and *Yonezawa* patents fails to disclose a pull member that is connected to an intermediate member substantially at all times in a manner to prevent relative axial movement between the pull member and the intermediate member, as is required by pending claim 1, a *prima facie* case of obviousness cannot be established, and withdrawal of this rejection is respectfully requested.

Further since the configuration of the device of the *Hartley* patent *must* use relative axial movement between the rod 7, the plugs 4, 5 and the split ring 2 in order to cause the split ring to expand and contract, as discussed above, it would not have been obvious for a skilled artisan to modify the device of the *Hartley* patent to have a pull member that is connected to an intermediate member substantially at all times in a manner to prevent relative axial movement between the pull member and the intermediate member, since such a modification would destroy the function of the device of the *Hartley* patent.

Accordingly, since a person having ordinary skill in the art would not have modified the device of the *Hartley* patent to have a split ring connected to the rod intermediate member substantially at all times in a manner to prevent relative axial movement between the pull member and the intermediate member, as is required by pending claim 1, a *prima facie* case of obviousness cannot be established, and withdrawal of this rejection is respectfully requested.

Similarly, none of the *Hartley*, *Rabe*, and *Yonezawa* patents disclose a fluid flow hole opened in the straight outer surface of an intermediate member and closed by close engagement with an inner surface of the hole in the moveable member, as is required by pending claim 1.

The *Hartley* patent discloses a split ring 2 that has a gap 3 in its periphery. However, the gap is not disclosed as being a fluid flow hole. Further, since the gap



extends along the entire length of the split ring 2 (Fig. 2), at least one end of the gap remains open when the split ring is in close engagement with the inner surface of the tube (Fig. 1).

The Office action turns to the *Yonezawa* patent to cure this deficiency of the *Hartley* patent. A review of the *Yonezawa* patent reveals, however, that there is no fluid flow hole opened in the outer surface of the shuttle member 23. In fact, the only fluid hole described, blowout hole 42, is clearly shown as being opened in the pull rod 31. Further, since fluid exiting the hole 42 passes over the outer surface of the shuttle member 23 (col. 6, lines 13-18), a skilled artisan would not have had any reason to provide a fluid flow hole opened in the outer surface of the shuttle member 23.

Additionally, the structure of the *Yonezawa* patent having the hole 42 present in the upper end portion is indispensable to the proper functioning of the clamping apparatus of the *Yonezawa* patent (col. 5, lines 34-43). As previously mentioned, the compressed air discharged from the blowhole 42 cleans a fitting gap between the shuttle member 23 and the positioning hole 12 (col. 6, lines 13-18). However, if a fluid flow hole in addition to blowout hole 42 is provided in the outer surface of the shuttle member 23, as is proposed by the Office action, an upper portion of the surface of the shuttle member 23 above the additional fluid flow hole would not be cleaned, due to the interference between the fluid flow coming from the blowout hole 42 and the added fluid flow hole in the shuttle member 23. Accordingly, for at least this additional reason, a person having ordinary skill in the art would not have provided an additional hole in the surface of the shuttle member 23, as is proposed in the Office action, since such a change would destroy the function of the device of the *Yonezawa* patent. Specifically, at least a portion of the surface of the shuttle member 23 would not be cleaned when such a configuration is utilized.

The *Rabe* patent fails to disclose any structure that can be considered a fluid flow hole in an outer surface of an intermediate member.

Thus, since none of the *Hartley*, *Rabe*, and *Yonezawa* patents discloses a fluid flow hole opened in the outer surface of an intermediate member and closed by close



engagement with an inner surface of the hole in the moveable member, as is required by pending claim 1, and a skilled artisan would not have made such a modification, the proposed combination of the *Hartley*, *Rabe*, and *Yonezawa* patents fails to disclose every feature of pending claim 1. Accordingly, a *prima facie* case of obviousness cannot be established, and withdrawal of this rejection is respectfully requested.

As mentioned above, applicant submits that independent claim 1 is patentable and therefore, claims 6-9, which depend from claim 1, are also considered to be patentable as containing all of the elements of claim 1, as well as for their respective recited features.

2. Conclusion

In view of the foregoing remarks, it is respectfully submitted that the application is in condition for allowance. Accordingly, it is respectfully requested that every pending claim in the present application be allowed and the application be passed to issue.

If any issues remain that may be resolved by a telephone or facsimile communication with the applicants' attorney, the examiner is invited to contact the undersigned at the numbers shown below.

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Respectfully submitted,  
  
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